UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/603,451	06/23/2000	Sundeep Bajikar	04230.P9130	9990

7590 09/30/2005

Blakely Sokoloff Taylor & Zafman LLP
12400 Wilshire Boulevard
7th Floor
Los Angeles, CA 90025

EXAMINER	
ISSING, GREGORY C	
ART UNIT	**PAPER NUMBER**
3662	

DATE MAILED: 09/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/603,451	BAJIKAR, SUNDEEP	
	Examiner	Art Unit	
	Gregory C. Issing	3662	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *15 July 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,4-21,25-28,30-36,38 and 40-43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,4-21,25-28,30-36,38 and 40-43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

EA

1. Claims 1-20 are objected to because of the following informalities: each of claims 1 and 18 is set forth as an "apparatus" which appears to be misdescriptive. It appears that each should be directed to a "system" since it is no clear how an apparatus can consist of a plurality of base stations. Appropriate correction is required.

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1 and 4 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
In claim 1, line 10, the language "the correction information" lacks a proper antecedent basis.
The subject matter of claim appears to conflict with the independent claim since the independent claim recites selecting a subset based on each subset utilizing a set of satellites also used by a mobile device whereas claim 4 recites selecting a first subset based on coarse location and a second subset based on more precise location. How does the first and second subsets relate to the subset set forth in the independent claim?

4. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1, 4-21, 25-28, 30-36, 38, and 40-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Biacs et al (6,229,478) in view of either one of Kee et al or Batchelor et al and further in view of any one of Suzuoki et al, Hatch et al or Martin.

Biacs et al disclose a plurality of base stations having known positions (Fig 5) communicating with a network server (Figs 2, 3, 4), and a mobile device (Fig. 6) whose accurate position is desired. Each reference station generates location information from GPS satellites and comprises data of its known position to generate satellite specific-differential correction data in the form of pseudorange and pseudorange rate corrections as well as a communication means to communicate such to a server station. The server station selects a subset of the received set of reference station differential correction

information and utilizes such to differentially correct the position of a mobile station via a differential correction engine.

Biacs et al differ from the claimed subject matter since the differential correction information for each reference station is determined at each respective reference station as opposed to the claimed correction information calculation module receiving the reference station location information and the known location of the reference stations.

Each of Kee et al and Batchelor et al teach the conventionality of forwarding GPS information from a reference station to a master station in order to calculate the correction information. Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify Biacs et al by centralizing the computation of differential correction information in a central location in view of the teachings of either one of Kee et al or Batchelor et al so as to reduce the computational processing and size of components at each of the reference stations.

Biacs et al additionally differ from the claimed subject matter since the selection of the subset of reference stations is based on the proximity of the roving device to the reference station whereas the amended claim language sets forth selecting the subset on the basis of a subset of stations utilizing the same set of satellites. It is considered that typically each of the reference stations will have a clear view of the sky and hence not have blocked satellites in the manner that the mobile device would be blocked from reception; thus the number of satellites received by the reference station will always comprise the satellites used by a mobile device in its area as well as additional satellites. Only the mobile device will typically be blocked due to buildings as such. Thus, in reality, the reference station nearest to the user will obviously, if not inherently, utilize the same set of satellites. Moreover, the corrections described by Biacs et al include satellite specific corrections; thus, the corrections to be applied to the mobile device's location information will also be satellite specific, thus requiring the same set of satellites. However, the following prior art is additionally cited for its suggestion to utilize corrections associated with the same set of satellites between a user and a differential correction reference station. For example, Suzuoki et al (JP 066003431 A) discloses a position measuring station 10 measuring a self-position using a plurality of satellites, informs a reference station of numbers (SV ID) of satellites used for measurement, and the

reference station calculating position correction information using the same combination of satellites. Hatch et al (5,764,184) disclose providing differential correction data for calculating a corrected value of position for a mobile user wherein at least one reference station computes and transmits pseudorange correction data for each of the satellites used by the mobile user and wherein pseudorange correction information from a plurality of reference stations may be weighted for calculating a mobile user position. Martin (5,638,077) discloses a differential GPS system wherein the user vehicle sends an approximate position, velocity, and list of satellites observed to a base station which generates a potential solution set for all the possibly observable satellites so as to select the same observable set to form a base station solution.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify Biacs et al by utilizing the same set of satellites used by the roving station in the determination of the differential corrections from the reference stations in view of the prior art to any one of Suzuoki et al, Hatch et al or Martin so as to provide accurate satellite specific pseudorange correction data.

Applicant argues that the prior art fails to disclose base station selection based at least in part on each of the subset of base stations utilizing a set of satellites that is also utilized by the mobile device for which the correction information is being computed.

The applicant's argument is not convincing. Each of the reference stations of Biacs et al, corresponding to the claimed plurality of base stations, receive signals from all in-view satellites and create differential correction information in the form of satellite specific corrections, e.g. pseudorange and pseudorange rate corrections. The mobile device, and not the base stations, typically receive from less than all of the possible in view satellites for a predetermined area. Thus, the reference stations include information to more satellites than the mobile device. Therefore, a nearest base station will always encompass the same satellites used by a mobile device in the area as well as additional satellites. The applicant's argument that due to blocking buildings, the mobile station and the first base station have to utilize different sets of satellites, is not persuasive, since the reference station typically receives from more than four satellites since more than four satellites are in a sky-view and the base stations typically

have a clear view of the sky. Moreover, the reference station would conventionally utilize a 12-channel receiver; thus, any of the twelve satellites possibly visible from the reference station would fall within the reduced number of the mobile device. However, additional prior art is cited to further show the conventionality of identifying the satellites used in the mobile position determination in order to obtain differential correction data corresponding to the same set of satellites so as to utilize the satellite specific measurement domain data corresponding to the pseudorange and pseudorange rate corrections.

6. Claims 1, 4-21, 25-28, 30-36, 38, and 40-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Loomis in view of any one of Suzuoki et al, Hatch et al or Martin.

The rejection is substantially set forth in the previous Office Action.

It is considered that typically each of the reference stations will have a clear view of the sky and hence not have blocked satellites in the manner that the mobile device would be blocked from reception; thus the number of satellites received by the reference station will always comprise the satellites used by a mobile device in its area as well as additional satellites. Only the mobile device will typically be blocked due to buildings as such. Thus, in reality, the reference station nearest to the user will obviously, if not inherently, utilize the same set of satellites. Moreover, the corrections described by Loomis include satellite specific corrections; thus, the corrections to be applied to the mobile device's location information will also be satellite specific, thus requiring the same set of satellites. However, the following prior art is additionally cited for its suggestion to utilize corrections associated with the same set of satellites between a user and a differential correction reference station. For example, Suzuoki et al (JP 066003431 A) discloses a position measuring station 10 measuring a self-position using a plurality of satellites, informs a reference station of numbers (SV ID) of satellites used for measurement, and the reference station calculating position correction information using the same combination of satellites. Hatch et al (5,764,184) disclose providing differential correction data for calculating a corrected value of position for a mobile user wherein at least one reference station computes and transmits pseudorange correction data for each of the satellites used by the mobile user and wherein pseudorange correction information from a plurality of reference stations may be weighted for calculating a mobile user position. Martin (5,638,077) discloses a differential GPS system wherein the user vehicle sends an approximate position, velocity, and

list of satellites observed to a base station which generates a potential solution set for all the possibly observable satellites so as to select the same observable set to form a base station solution.

Thus, it would have been obvious to one having ordinary skill in the art at the time the invention was made to further modify Loomis by utilizing the same set of satellites used by the roving station in the determination of the differential corrections from the reference stations in view of the prior art to any one of Suzuoki et al, Hatch et al or Martin so as to provide accurate satellite specific pseudorange correction data.

The applicant argues that the prior art fails to disclose base station selection based at least in part on each of the subset of base stations utilizing a set of satellites that is also utilized by the mobile device for which the correction information is being computed. This is not convincing. Firstly, Loomis teaches the utilization of a plurality of satellites bounding the mobile user to generate virtual fiducial station corrections using the set of satellites receivable from the mobile user. Thus, this meets the scope of the claimed subset of stations that utilize the same set of satellites as utilized by a mobile station. Moreover, the additional prior art further teach the desire to utilze the same set of satellites to provide the differential correction information. Since the typical differential correction information is satellite specific, i.e. pseudorange measurements, the use of differential corrections associated with the same set of satellites is not novel.

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

8. Lewis (5,587,715) discloses a command center that receives differential data and approximate user location, determines based upon the approximate user location and the known locations of the reference stations one of the corresponding differential stations which is presently in sight of the same subset of satellites as the object (6:10-41). Moeglein et al (6,215,441) disclose (1) differential corrections are for the most part in the measurement domain (1:61-64) and (2) provision of a network of reference stations disposed in an area over which mobile stations will coincide so as to see the same set of satellites (2:3-16).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gregory C. Issing whose telephone number is (571)-272-6973. The examiner can normally be reached on Monday - Thursday 6:00 AM- 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Tarcza can be reached on (571)-272-6979. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Gregory C. Issing
Primary Examiner
Art Unit 3662

gci